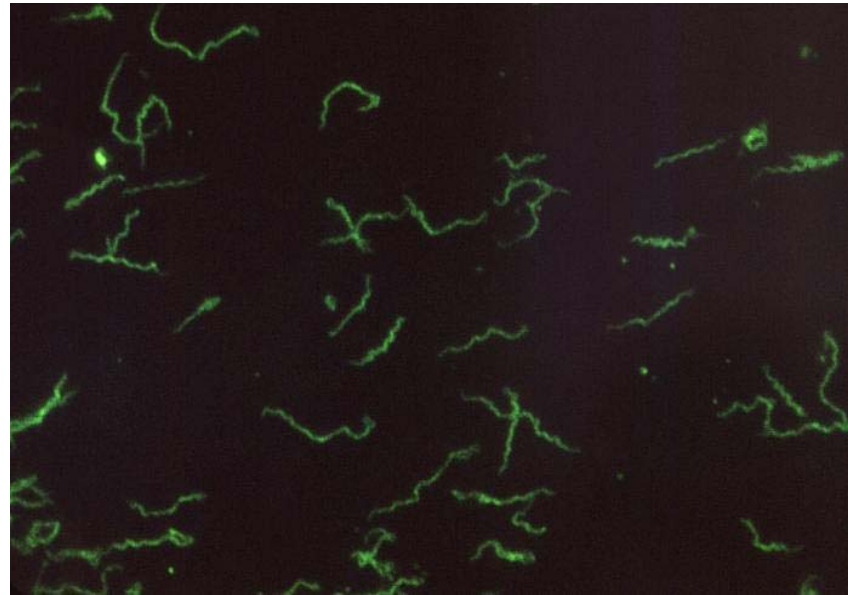


# Introduction to Communicable Disease Surveillance and Investigation in North Carolina



# Syphilis



**Victoria Mobley, MD**  
**Medical Epidemiologist**



# Learning Objectives

## Participants

- Know the causative organism for syphilis
- Distinguish primary and secondary syphilis clinical presentations
- Locate resources for the commonly used syphilis testing algorithms
- Locate the CDC treatment guidelines for syphilis



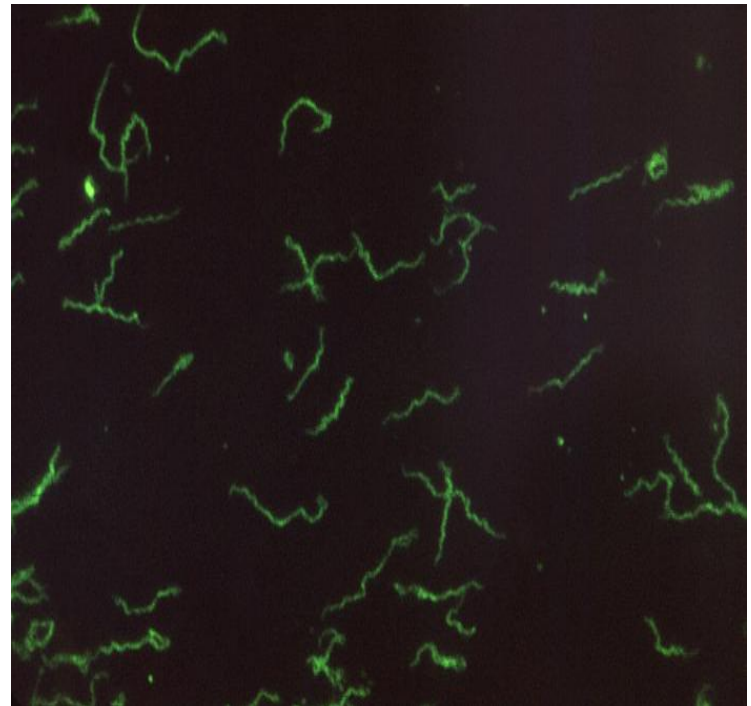
# *Treponema pallidum*

Motile spirochete bacterium

Enters via breaches in the squamous or columnar epithelium

Spread by vaginal, oral or anal intercourse

Pregnant women can transmit syphilis to unborn children



# Primary Syphilis

Incubation period is ~21 days  
(range is 10-90 days)

Sore (chancre) develops where  
the organism enters the body

Chancre is painless and may go  
undetected

Chancre heals in 3-12 weeks  
regardless of treatment



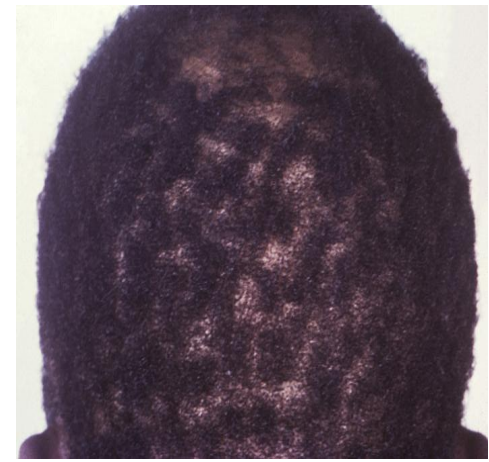
# Secondary Syphilis

Develops 4-10 weeks after primary lesion

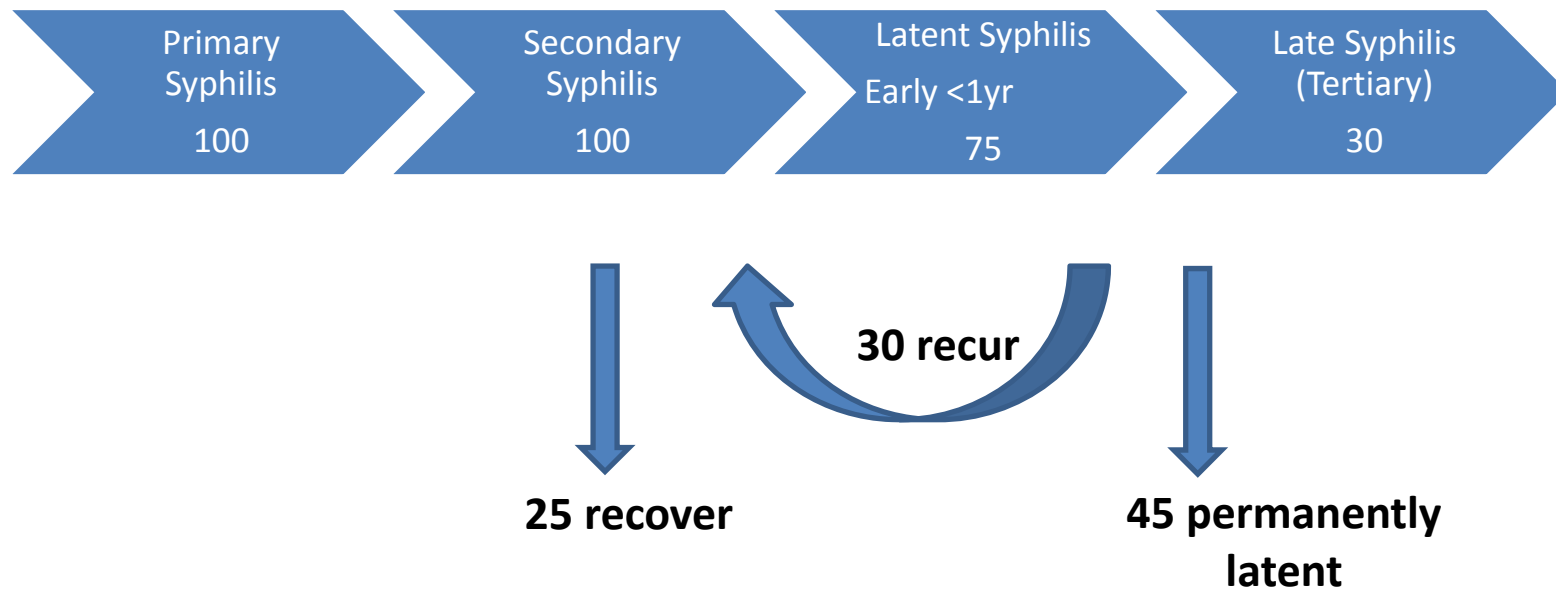
Rash is macular, discrete and small (<6 mm)

Lesions are contagious (wet > dry)

Other manifestations:  
patchy alopecia  
condylomata lata



# Untreated Syphilis



# Darkfield Microscopy

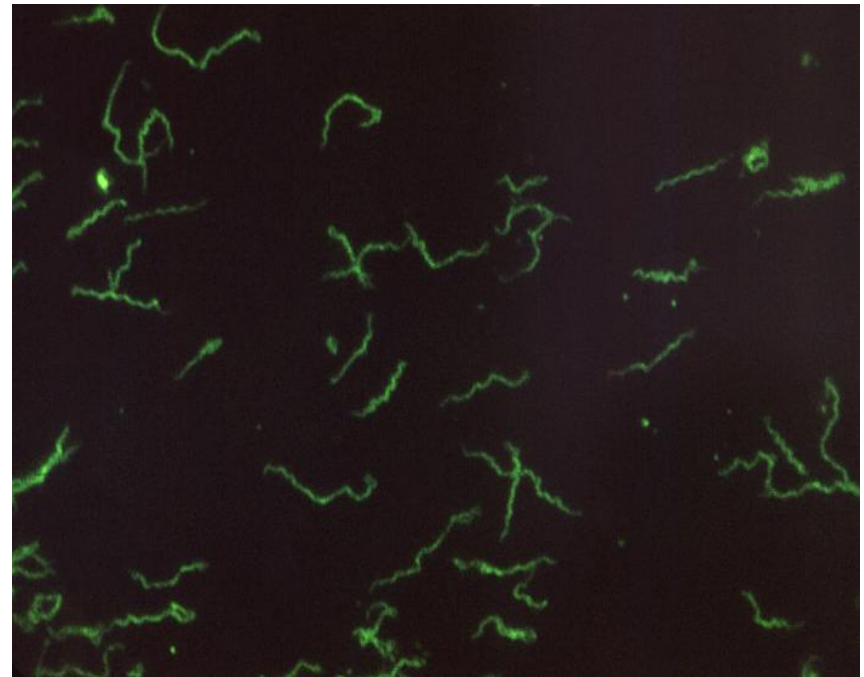
## Direct Fluorescent Antibody

### Advantages

- Rapid results
- Definitive diagnosis

### Disadvantages

- Need specialized equipment
- Requires an experienced microscopist
- Must be performed immediately
- False negatives are possible
- Questionable efficacy on oral lesions





# Syphilis Testing

## **Nontreponemal tests**

- RPR/VDRL
- Detects antibodies to nonspecific antigens

**Quantitative & Qualitative**

**Usually revert to negative following treatment**

## **Treponemal tests**

- EIA/TPPA/FTA-ABS
- Detects ABS specific to *T. pallidum*

**Qualitative**

**Remains positive for life**

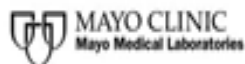
## Sensitivity of Serological Tests in Untreated Syphilis

### Stage of Disease (Percent Positive [Range])

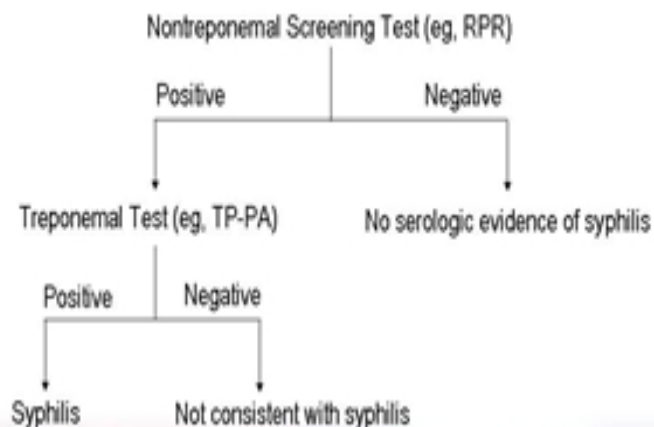
Test	Primary	Secondary	Latent	Tertiary
VDRL	78 (74–87)	100	95 (88–100)	71 (37–94)
RPR	86 (77–99)	100	98 (95–100)	73
FTA-ABS*	84 (70–100)	100	100	96
Treponemal Agglutination*	76 (69–90)	100	97 (97–100)	94
EIA	93	100	100	

\*FTA-ABS and TP-PA are generally considered equally sensitive in the primary stage of disease.

# Old vs. New Testing Algorithm



## Diagnosis: Traditional Algorithm

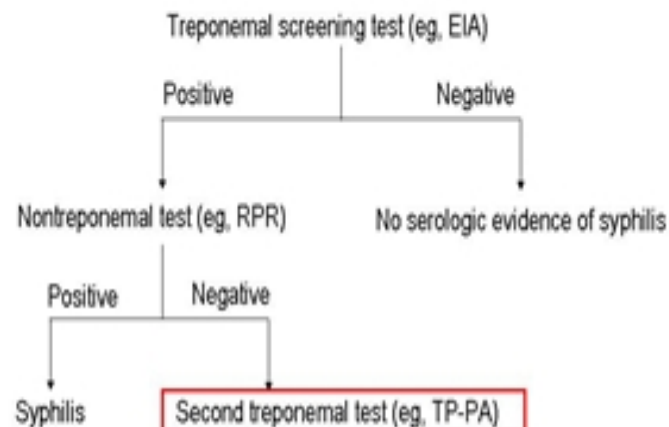


Syphilis Testing

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## Diagnosis: Proposed Algorithm with Treponemal Screening Test



Syphilis Testing

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APHL/CDC 2009, Expert Consultation Meeting Summary Report, Jan 13-15, 2009

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# Treatment Guidelines

## **Primary, Secondary and Early Latent Syphilis**

- Benzathine penicillin G 2.4 million units IM in a single dose

### Alternative regimen\*

- Doxycycline 100 mg po BID x 14 days **OR**
- Tetracycline 500 mg po 4 times a day x 14 days

## **Treatment failure, Late Latent or Unknown Duration, Tertiary Syphilis**

- Benzathine penicillin G 2.4 million units IM once weekly x 3 weeks

### Alternative regimen\*

- Doxycycline 100 mg po BID x 28 days **OR**
- Tetracycline 500 mg po 4 times a day x 28 days

\*Alternative regimens should never be used to treat pregnant women.

# Follow- Up & Other Considerations

**Serologic follow-up to assess for 4-fold decrease in RPR titer (i.e. 1:256→1:64)**

- HIV-negative: 6, 12 and 24 months
- HIV-positive: 3, 6, 9, 12 and 24 months

**When/Who to retest for syphilis**

- Every 3-6 months in high-risk individuals

**HIV testing should be performed in all patients diagnosed with syphilis, unless they are already known to be positive**

**Sex partner treatment**

- Epi-treat if exposure occurred  $\leq 3$  months for primary,  $\leq 6$  months for secondary or  $\leq 1$  year for EL index cases
- Serologic testing is not available and clinical

# Case Definitions

<http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/toc.html>



## 2012 North Carolina Division of Public Health Communicable Disease Manual

Public Health Management of Reportable  
Diseases and Conditions

NC Division of Public Health • Epidemiology Section  
Communicable Disease Branch  
1902 Mail Service Center  
Raleigh NC 27699-1902  
919 - 733 - 3419 (main number – 24 hours)  
919 - 715 - 4699 (secure fax)

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<a href="#">NC Electronic Disease Surveillance System (NC EDSS)</a>	<a href="#">Additional Communicable Disease Manuals</a> (HBV, Rabies, STD, TB, Vaccine-Preventable)

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